AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1.   (currently amended): A device for determining labeled data stream switchpath(s) in a label switched communication network comprising a multiplicity of label switched routers (LSR), each stream being associated with a chosen forwarding equivalence class and with a chosen set of service data, which device is characterized in that it includescomprises:

————a memory means (Mn) adapted to storefor storing a table (Tn1)-of correspondences between sets of service data and information data representative of at least two chosen criteria and a descriptive structure (Tn2)-containing information data representative of a state of utilization and of a topology of the network, and

————a processing means (P)-adaptedfor:

a)   to receivereceiving a path set-up request containing a set of service data associated with a stream to be switched, and for determining in said table (Tn1)-at least two criteria stored in corresponding relationship to said set of service data associated with the stream,

b)   to ensureensuring the connectivity of said multiplicity of nodeslabel switched routers, on the basis of information data stored in said descriptive structure-(Tn2),

c)   to calculatecalculating from among said nodes-label switch routers (LSR)-possible paths (r*)-between a departure node (LER1)-and a destination node (LER2) taking account of at least one of said two criteria that have been determined and then to deducededucing an ideal solution (Z(s))-from performances (Z(r*))-of said possible paths (r*)-on at least one of said criteria,

d) ~~to assign~~assigning each possible path ~~(r*)~~an interest value ~~(U(r))~~taking account of said ideal solution ~~(Z(n))~~and then ~~classify~~classifying said possible paths taking account of their respective interest values, and

e) ~~to select~~selecting a path from among said classified possible paths and then ~~associating~~associate with said stream to be switched a label representative of said selected path so that said labeled stream is switched via said path to the destination node ~~(LER2)~~.

2. (currently amended): A device according to claim 1, ~~characterized in that~~wherein said processing means ~~(P) are adapted to work~~works on the basis of sets of service data stored in said table ~~(Tn1)~~and representative of a type of service and/or a quality of service.

3. (currently amended): A device according to claim 1, ~~characterized in that~~wherein at least some of said information data associated with a set of service data ~~being~~is representative of at least one local constraint, and

said processing means ~~(Pn) are adapted to determine~~determines from among said multiplicity of ~~nodes~~label switched routers ~~(LSR)~~ all of the pairs of ~~nodes~~label switched routers that can set up between them an oriented connection supporting each local constraint stored in corresponding relationship to a set of service data associated with said stream to be switched and then ~~to ensure~~ensuring the connectivity of all of the ~~nodes~~label switched routers of said pairs.

4. (currently amended): A device according to claim 1, ~~characterized in that~~wherein some of said information data, associated with a set of service data, ~~being~~is representative of at least one global constraint, and

said processing means ~~(Pn) are adapted to retain~~<u>retains</u> from among said possible paths ~~(r*)~~ those that satisfy each global constraint stored in corresponding relationship to a set of service data associated with said stream to be switched, so as to assign interest values ~~(U(r))~~ only to said retained possible paths ~~(r*)~~.

5.   (currently amended): A device according to claim 1, ~~characterized in that~~<u>wherein</u> at least one of said criteria is of the nonadditive type.

6.   (currently amended): A device according to claim 5, ~~characterized in that~~<u>wherein</u> said processing means ~~(Pn) are adapted~~, when calculating possible paths ~~(r*)~~ and deducing said ideal solution ~~(Z(π))~~, ~~to integrate~~<u>intergrates</u> a trace storing a route corresponding to a partial path, so as to detect and prevent the occurrence of cycles in the paths under construction.

7.   (currently amended): A device according to claim 6, ~~characterized in that~~<u>wherein</u> said processing means ~~(Pn) are adapted to~~ <u>retains</u>~~retain~~ solutions that are "weakly nondominated" on each nonadditive criterion determined, during the procedure of eliminating said partial paths.

8.   (currently amended): A device according to claim 1, ~~characterized in that~~<u>wherein</u> said processing means ~~(Pn) are adapted to verify~~ <u>verifies</u> said connectivity by applying a mechanism of propagation from the departure node ~~(LER1)~~ to all the <u>label switched routers</u>~~other nodes~~ ~~(LSR)~~ of said multiplicity of ~~nodes~~<u>label switched routers</u>, so that each ~~node~~<u>label switched router</u> ~~(LSR)~~ is visited.

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9.   (currently amended): A device according to claim 1, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to determine~~ determines for each path, values representative of its "performance" ~~(Z(r))~~ relative to each criteria determined and to qualify a path ~~(r)~~ for which said performance values ~~(Z(r))~~ are "nondominated" as a possible path ~~(r*)~~.

10.   (currently amended): A device according to claim 9, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to determine~~ determines for each criterion determined, the best performance value ~~(Z*(r))~~ observed over said possible paths, referred to as the "optimum value", and then ~~to construct~~constructs said ideal solution ~~(Z(π))~~ in the form of a multiple of components consisting of the various optimum values determined.

11.   (currently amended): A device according to claim 10, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to assign~~assigns an interest value ~~(U(r))~~ to each possible path ~~(r)~~ when it characterizes the greatest value of the components, associated with the various criteria determined, of a weighted Tchebychev function, as a function of differences between the performance of said possible path ~~(r*)~~ and the corresponding optimum value of said ideal solution ~~(Z(π))~~.

12.   (currently amended): A device according to claim 11, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to preselect~~preselects k possible paths having the k lowest interest values ~~(U(r))~~ and then ~~to select~~selects a path from the k preselected paths.

13.   (currently amended): A device according to claim 12, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to calculate~~calculates bidirectional paths.

14.   (currently amended): A device according to claim 12, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to select~~selects from said k paths at least one other path dedicated to connection restoration.

15.   (currently amended): A device according to claim 3, ~~characterized in that~~wherein said local and/or global constraints determined belong to a group comprising at least the minimum bandwidth required, the maximum length of the path, the maximum duration of the path, a set of prohibited or mandatory connections, the maximum and/or minimum number of hops on the path, one or more mandatory nodes, one or more prohibited nodes, at least one authorized class of service, a set of path colors, a wavelength division multiplexing capacity, a concatenation capacity, an assignment capacity, and a protection capacity.

16.   (currently amended): A device according to claim 1, ~~characterized in that~~wherein said criteria belong to a group comprising at least the available bandwidth ~~(C2)~~, the number of hops on the path ~~(C3)~~, the duration of the path ~~(C1)~~, a wavelength division multiplexing capacity, a concatenation capacity, an assignment capacity, and a protection capacity.

17.   (currently amended): A device according to claim 16, ~~characterized in that~~wherein said criteria comprise the available bandwidth ~~(C2)~~ and the duration of the path ~~(C1)~~.

18.   (currently amended): A device according to claim 17, ~~characterized in that~~wherein said processing means ~~(Pn) are adapted to impact~~impacts said criterion applying to the duration of the path ~~(C1)~~ by a penalty.

19.   (currently amended): A device according to claim 18, ~~characterized in that~~wherein said penalty applies to the administration cost ~~(CA)~~ of the path.

20.   (currently amended): A device according to claim 1, ~~characterized in that~~wherein said correspondence table ~~(Tn1)~~ comprises weighting factors associated with at least some of said criteria wherein each said weighting factor represents the ~~as a function of their~~ importance of each said respective criteria with respect to the other criteria.

21.   (currently amended): A label edge router ~~(LER)~~ for a label switched communication network, ~~characterized in that it comprises~~comprising a device according to claim 1.